

### **REMARKS**

By the present amendment claims 5, 19, 26-28, 33, 41, 50, 54-58, 60, 61, and 63-65 have been amended. No new matter has been added. Therefore, claims 5-31, 33-47, 50, 54-58, 60-61, and 63-65 are currently pending.

Claims 28, 33, 41, 58, 65, 42, 43, 44, 46, 34, 35, 36, 39, 47, 40, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 3,982,440 to Groleau et al. This rejection is respectfully traversed.

In order to expedite prosecution of the application, and without agreeing with the Examiner's rejections, independent claims 28, 33, 41, 58, 63, and 65 have been amended. These independent claims have been amended to clarify that a model health index "indicates an estimate of an ability of a model to predict the behavior of the at least one process output as compared to an expected output" and that a process health index "indicates an estimated probability of violation by at least one process output of predefined specification limits." No such indexes are taught in Groleau.

Groleau teaches a system for process control, but does not teach or suggest a method for monitoring the quality of that process control. In the system of Groleau, as a part is being injection molded, two pressure values are recorded. From these pressure values the viscosity of the material used to make the part can be determined. See (Col. 10, lines 35-45) and (Col. 20, lines 9-14). By comparing an actual calculated viscosity to a target viscosity, based on theoretical equations, it can be determined if a part will be of the proper quality or not. Appropriate adjustments can be then made to the process. See (Col. 20, lines 1-9) and (Col. 18, lines 23-29).

The amended claims recite that the model health index "indicates an estimate of an ability of a model to predict the behavior . . ." Groleau compares an actual measured value directly to a theoretical value by computing a difference. See (Col. 20, line 6). This difference is meant to represent how good a particular part is. The underlying assumption in Groleau is that a part that

was manufactured under conditions very close to the target conditions is a good quality part. This assumption may or may not be correct. Further, it may be initially correct, but it may become less correct as more parts are manufactured.

In contrast, Applicants' invention computes a model health index ("an estimate of an ability of a model") that provides "an estimate of a model to predict the behavior of at least one process output." When in possession of the instantly claimed invention, one can obtain information to evaluate the underlying assumption being made in Groleau. When parts are being made that closely match the process model, are good parts being produced? Alternatively stated, is the process model a good model? Applicants' model health index provides information about whether parts that match a process model will be good parts. Groleau does not have a model health index, and simply assumes that a process matching its target value will produce good parts.

Similarly, Applicants' invention computes a process health index that provides an "estimated probability of violation" of a process output. This again provides information on the quality of a process model and its ability to produce parts that meet predefined limits. Although Groleau calculates a difference of how close a process output is to a target value, Applicants' index describes how likely a process output will violate a predefined limit, even when a part is being manufactured in accordance with the process model. Groleau simply does not have this type of index relating to its process model is.

Accordingly, the Examiner is respectfully requested to withdraw the rejection of independent claims 28, 33, 41, 58, 63; and 65 as well as corresponding dependent claims 42, 43, 44, 46, 34, 35, 36, 39, 47, 40, and 30.

Claims 5, 19, 26, 27, 28, 33, 41, 50, 54-58, 60, 61, 63-65, 13, 15, 17, 20, 22, 24, 49, 42, 43, 44, 46, 34, 35, 36, 39, 4, 16, 18, 23, 25, 47, 40, 10, and 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 6,389,331 to Jensen et al. This rejection is respectfully traversed.

In order to expedite prosecution of the application, and without agreeing with the Examiner's rejections, independent claims 5, 19, 26, 27, 28, 33, 41, 50, 54-58, 60, 61, and 63-65 have been amended to recite "an advanced manufacturing process control system that compensates for changes in a manufacturing process." Jensen fails to teach such a "manufacturing process control system," and certainly not one that "compensates for changes in a manufacturing process."

Jensen discloses a heating ventilation and air conditioning (HVAC) control system that "relates to networks for managing systems of a building," and describes a "technique for monitoring performance of a facility management system." See (Col. 1, lines 6-7) and (Col. 1, lines 52-53). Jensen also states in the summary of the invention, "A general object of the present invention is to provide a technique for monitoring performance of a facility management system and indicating that performance to a human operator." See (Col 1, lines 53-55).

There is no manufacturing of parts being done in Jensen, therefore there cannot be any compensation "for changes in a manufacturing process" as recited in claim 5. The problem identified in Jensen is that "the components on the network within a typical building produce so much operational information, it is difficult even for an experienced operator to evaluate the overall performance of the system to detect potential problems" (Col. 1, lines 40-44). The solution of Jensen is to "provide a hierarchy of indices which characterize the performance of different levels of the facility management system." These indices represent how components within the network of Jensen are doing, but they are not related to any type of model for those components. Therefore, the indices are not the model health index or process health index recited in claim 5.

Accordingly, the Examiner is respectfully requested to withdraw the rejection of independent claims 5, 19, 26, 27, 28, 33, 41, 50, 54-58, 60, 61, and 63-65 and corresponding dependent claims 13, 15, 17, 20, 22, 24, 49, 42, 43, 44, 46, 34, 35, 36, 39, 4, 16, 18, 23, 25, 47, 40, 10, and 29-31.

Claims 28, 33, 41, 58, 65, 42, 43, 44, 46, 34, 35, 36, 39, 47, 40, and 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 6,259,959 to Martin. This rejection is respectfully traversed.

In order to expedite prosecution of the application, and without agreeing with the Examiner's rejections, independent claims 28, 33, 41, 58, 63, and 65 have been amended to recite "an advanced manufacturing process control system that compensates for changes in a manufacturing process." These claims have also been amended to recite that a model health index "indicates an estimate of an ability of a model to predict the behavior of at least one process output as compared to an expected output" and that a process health index "indicates an estimated probability of violation by at least one process output of predefined specification limits." The Examiner conceded on page 16 that Martin fails to teach a model health index or a process health index:

However, neither Martin nor Ali, taken either alone or in obvious combination disclose a method having all the claimed features of applicant's instant invention, specifically including: calculating at least one of a model health index, wherein the model health index indicates an estimate of an ability of a model to predict the behavior of the at least one process output as compared to an expected output, and a process health index, wherein the process health index indicates an estimated probability of violation by the at least one process output of predefined specification limits. It is for these reasons that applicant's invention defines over the prior art of record. (Office Action, page 16)

Therefore, in view of Applicants' amendments now explicitly reciting these features, the claims are believed to be allowable over the cited prior art. Accordingly, the Examiner is respectfully requested to withdraw the rejection of independent claims 28, 33, 41, 58, 63, and 65, and corresponding dependent claims 42, 43, 44, 46, 34, 35, 36, 39, 47, 40, and 29-31.

**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees, which may be required for this Amendment, or credit any overpayment to Deposit Account No. 08-0219.

In the event that an Extension of Time is required, or which may be required in addition to that requested in a petition for an Extension of Time, the Commissioner is requested to grant a petition for that Extension of Time which is required to make this response timely and is hereby authorized to charge any fee for such an Extension of Time or credit any overpayment for an Extension of Time to Deposit Account No. 08-0219.

Respectfully submitted,



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